

requirements, before starting the cool down phase. High water concentration numbers were reported during the EM test. I strongly suggest contamination engineers determine the allowed H2O residual concentration levels prior to cool down, and that the data be comprehensively analyzed to assure that there are no ice absorption effects remaining.

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Gerry Godden

email from Gerry Godden 8/24/95 9:00 AM

Follow-Up to my email regarding SBRC scatter spec.

During discussions with Univ. of AZ Paul Spyak and Stuart Biggar yesterday, it was felt that my comments on Tom Kampe's IM on this subject were not clear and direct enough regarding the importance of better scatter quality fore-optics than we currently have. Stuart Biggar strongly feels that we should have no less than 10 Angstrom RMS roughness quality fore-optics elements. It is further felt that the FM and PM glass substrate optics could readily be better than that, typical of the ScMA mirror 3 to 5 Angstrom RMS roughness. It is not clear why SBRC would be exploring 20 Angstrom RMS roughness FMs and PMs, unless this is to establish a reference point with past procurements for comparison and negotiating purposes.

Gerry Godden

11.0 Bob Martineau (All PFM Focal Planes delivered; Progress on FM detectors)

email from Bob Martineau 8/24/95 2:15 PM

- 1) PFM FPAs: All PFM FPAs have been delivered.
- 2) FM1: The FM1 NIR FPA has completed final tests with no problems. The FM1 VIS DA has completed 40% of tests with no problems. The FM1 LWIR DA has been delivered to test. One FM1 SMWIR SCA has passed preliminary acceptance tests.
- 3) FM2: FM1 and FM2 VIS and NIR SCA tests are completed. FM2 VIS and NIR SCAs have been identified. Three potential FM2 LWIR SCAs have been identified. Each has one bad pixel. Others are being tested in search of a unit with no bad pixels. Three FM2 SMWIR SCAs have been tested. One failed with 3 bad pixels and 1 soft pixel. A second SCA had 2 marginally high NEI Band 25 pixels and 1 bad pixel. Bias optimization will be attempted to bring this unit into spec. The third unit is still in test and is considered the prime candidate for FM2 final build.
- 4) The FM1 and FM2 VIS filter assemblies have been received. The FM1 LWIR filter/bezel delivery is expected by Sept 7. The FM1 and FM2 SMWIR DAs will require new Band 26 filters. This will take 2 to 3 months.

12.0 Near Field Response Telecon

On August 11, a near field response telecon was held with SBRC. Presentation materials were prepared for the telecon by GSFC and SBRC.

The GSFC materials included the transient response requirement, descriptions of crosstalk, scatter, and ghosting, and extinction requirements for the VIS and NIR bands, and the S/MWIR and LWIR bands. "Some simulations relevant to MODIS bright target recovery performance" by Howard Gordon was included. Wayne Esaias provided comparisons of MODIS versus other instruments transient response specs along with expected percent of ocean data that would be returned. Wayne also included some responses based on Harvey Shack models. Eugene Waluschka did an independent scatter analysis of the MODIS visible light path. Shi-Yue Qiu provided a summary of ghosting and scattering results. Gerry Godden provided highlights of the BRO stray light analysis.

SBRC presentation materials included Lee Tessmer's introduction, EM results review and PFM predictions by Jim Young. Tom Pagano provided aft optics NFR test results, and Tom Kampe provided hardware status and implications of further upgrades.

Based on the information presented, here are a few conclusions and suggestions:

- 1) It appears MODIS will not be able to meet the very stringent transient response specification. It is also evident that an attempt should be made to try to get as close as possible to meeting the spec.
- 2) Analysis results relied on component BRDF data or typical BRDF data. It is difficult to make precise measurements near specular, so some of the error bars on the measured BRDF data could be significant. It still would be useful to have actual BRDF or BTDF data for those elements for which typical values were used.
- 3) PFM aft optics data preliminary results showed performance significantly better than predicted based on Harvey Shack models developed from BRDF/BTDF data. (SBRC is reviewing these results very closely before providing final results. Final results may be more in line with analysis predictions.)
- 4) Work should continue on required measurements and algorithms for data correction. This may include obtaining point spread function data for each pixel.
- 5) Although the impact of contamination on performance of the optics needs to be considered, it seems we should still strive for state of the art optics.
- 6) If possible, we should determine instrument near field response performance at various levels of assembly, so we can more reliably quantify the impact on performance of the various optical elements. This should include filter and detector crosstalk.
- 7) Far field response may have a significant impact on instrument transient response and needs to be understood and quantified.

Mike Roberto
August 28, 1995